EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S1	387155	(optimize or optimization)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2006/12/18 14:49
S2	5256	(bandwidth with (optimize or optimization))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2006/12/18 14:50
S3	100	(bandwidth with (optimize or optimization)) (line with color$4)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2006/12/18 14:50
S4	71	(bandwidth with (optimize or optimization)) (line with color$4) design	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2006/12/18 14:51
S5	495	(bandwidth with (optimize or optimization)) (line) (cost same design)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2006/12/18 14:52
S6	58	(bandwidth with (optimize or optimization)) (line same graph) (cost same design)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2006/12/18 16:02
S7	1	(bandwidth with (optimize or optimization)) (circle same graph) (cost same design)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2006/12/18 16:03
S8	93	(bandwidth with (optimize or optimization)) (line same optic$3) (cost same design)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2006/12/18 16:15

EAST Search History

S9	735	455/266.ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2006/12/18 16:15
S10	126	455/266.ccls. cost	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2006/12/18 16:15
S11	54	455/266.ccls. cost design	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2006/12/18 16:17
S12	239	725/95.ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2006/12/18 16:17
S13	188	725/95.ccls. bandwidth	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2006/12/18 16:17
S14	88	725/95.ccls. bandwidth cost	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2006/12/18 16:17
S15	33	725/95.ccls. bandwidth cost design	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2006/12/18 16:18
S16	13	(minimum adj2 cost) (bandwidth) (graph with color$3)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2006/12/18 16:18
S17	0	("2001/0017845").URPN.	USPAT	OR	OFF	2006/12/18 16:20

S18	13	("20010015958" | "20020015386" | "6256309" | "6370119" | "6560654" | "6600724" | "6621798" | "6628670" | "6633544" | "6687229" | "6690671" | "6697333" | "6717920").PN. OR ("7042846"). URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2006/12/18 16:26
S19	699	370/238.ccls.	US-PGPUB; USPAT; USOCR	OR	OFF	2006/12/18 16:26
S20	403	370/238.ccls. bandwidth	US-PGPUB; USPAT; USOCR	AND	ON	2006/12/18 16:26
S21	298	370/238.ccls. bandwidth cost	US-PGPUB; USPAT; USOCR	AND	ON	2006/12/18 16:26
S22	115	370/238.ccls. bandwidth cost design	US-PGPUB; USPAT; USOCR	AND	ON	2006/12/18 16:26
S23	59	370/238.ccls. bandwidth cost design optimiz$4	US-PGPUB; USPAT; USOCR	AND	ON	2006/12/18 16:27

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1 A survey of graph layout problems   ■

Josep Díaz, Jordi Petit, Maria Serna
September 2002 **ACM Computing Surveys (CSUR)**, Volume 34 Issue 3

Publisher: ACM Press

Full text available: 🗎 pdf(1.47 MB)   Additional Information: full citation, abstract, references, citings, index terms

Graph layout problems are a particular class of combinatorial optimization problems whose goal is to find a linear layout of an input graph in such way that a certain objective cost is optimized. This survey considers their motivation, complexity, approximation properties, upper and lower bounds, heuristics and probabilistic analysis on random graphs. The result is a complete view of the current state of the art with respect to layout problems from an algorithmic point of view.

Keywords: Approximation algorithms, complexity, embedding, heuristics, layout, parameterized complexity, random graphs

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2 Courses: State of the art in interactive ray tracing   ■

Peter Shirley
July 2006 **Material presented at the ACM SIGGRAPH 2006 conference SIGGRAPH '06**

Publisher: ACM Press

Full text available: 🗎 pdf(14.08 MB)   Additional Information: full citation, abstract

Recent improvements in computer hardware have allowed ray tracing to be used in some interactive applications. The trends in architecture and expansions of geometric model should increase the use of interactive ray tracing. This course presents recent and often not-yet published work on interactive ray tracing.

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3 GPGPU: general purpose computation on graphics hardware   ■

David Luebke, Mark Harris, Jens Krüger, Tim Purcell, Naga Govindaraju, Ian Buck, Cliff Woolley, Aaron Lefohn
August 2004 **ACM SIGGRAPH 2004 Course Notes SIGGRAPH '04**

Publisher: ACM Press

Full text available: 🗎 pdf(63.03 MB)   Additional Information: full citation, abstract, citings

The graphics processor (GPU) on today's commodity video cards has evolved into an extremely powerful and flexible processor. The latest graphics architectures provide

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tremendous memory bandwidth and computational horsepower, with fully programmable vertex and pixel processing units that support vector operations up to full IEEE floating point precision. High level languages have emerged for graphics hardware, making this computational power accessible. Architecturally, GPUs are highly parallel s ...

4 Real-time shading

Marc Olano, Kurt Akeley, John C. Hart, Wolfgang Heidrich, Michael McCool, Jason L. Mitchell, Randi Rost

August 2004 **ACM SIGGRAPH 2004 Course Notes SIGGRAPH '04**

Publisher: ACM Press

Full text available: pdf(7.39 MB)   Additional Information: full citation, abstract

Real-time procedural shading was once seen as a distant dream. When the first version of this course was offered four years ago, real-time shading was possible, but only with one-of-a-kind hardware or by combining the effects of tens to hundreds of rendering passes. Today, almost every new computer comes with graphics hardware capable of interactively executing shaders of thousands to tens of thousands of instructions. This course has been redesigned to address today's real-time shading capabili ...

5 On the use of registers vs. cache to minimize memory traffic

J. R. Goodman, W. C. Hsu

June 1986 **ACM SIGARCH Computer Architecture News , Proceedings of the 13th annual international symposium on Computer architecture ISCA '86**, Volume 14 Issue 2

Publisher: IEEE Computer Society Press, ACM Press

Full text available: pdf(923.51 KB)   Additional Information: full citation, abstract, references, citings, index terms

Single-chip computers are becoming increasingly limited by the access constraints to off-chip memory. To achieve high performance, the structure of on-chip memory must be appropriate, and it must be allocated effectively to minimize off-chip communication. We report experiments that demonstrate that on-chip memory can be effective for local variable accesses. For best use of the limited on-chip area, we suggest organizing memory as registers and argue that an effective register spilling sch ...

6 Cubic graphs

Raymond Greenlaw, Rossella Petreschi

December 1995 **ACM Computing Surveys (CSUR)**, Volume 27 Issue 4

Publisher: ACM Press

Full text available: pdf(1.90 MB)   Additional Information: full citation, references, citings, index terms, review

Keywords: NP-completeness, P-completeness, coloring, complexity theory, cubic graphs, discrete mathematics, graph theory, matching, planar graphs, regular graphs

7 Courses: Performance-driven facial animation

Fred Pighin, J. P. Lewis , George Borshukov , Chris Bregler , Parag Havaldar , Thomas Kang , Jim Radford , Mark Sagar , Steve Sullivan , Tom Tolles , Li Zhang

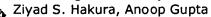July 2006 **Material presented at the ACM SIGGRAPH 2006 conference SIGGRAPH '06**

Publisher: ACM Press

Full text available: pdf(34.74 MB)   Additional Information: full citation, abstract

Performance-driven facial animation (PDFA) has recently been adopted in a number of important entertainment projects. This course describes tracking, cross mapping, and

model derivation technologies used in PDFA, and summarizes unresolved issues. Leading researchers and industry specialists present current and forthcoming motion-capture techniques, cross-mapping technologies, and application case studies from important recent and current projects.

8   The design and analysis of a cache architecture for texture mapping   ■
Ziyad S. Hakura, Anoop Gupta
May 1997 **ACM SIGARCH Computer Architecture News , Proceedings of the 24th annual international symposium on Computer architecture ISCA '97**, Volume 25 Issue 2
Publisher: ACM Press

Full text available: ⬛ pdf(2.10 MB)   Additional Information: full citation, abstract, references, citings, index terms

The effectiveness of texture mapping in enhancing the realism of computer generated imagery has made support for real-time texture mapping a critical part of graphics pipelines. Despite a recent surge in interest in three-dimensional graphics from computer architects, high-quality high-speed texture mapping has so far been confined to costly hardware systems that use brute-force techniques to achieve high performance. One obstacle faced by designers of texture mapping systems is the requirement ...

9   Data and memory optimization techniques for embedded systems   ■
P. R. Panda, F. Catthoor, N. D. Dutt, K. Danckaert, E. Brockmeyer, C. Kulkarni, A. Vandercappelle, P. G. Kjeldsberg
April 2001 **ACM Transactions on Design Automation of Electronic Systems (TODAES)**, Volume 6 Issue 2
Publisher: ACM Press

Full text available: ⬛ pdf(339.91 KB)   Additional Information: full citation, abstract, references, citings, index terms

We present a survey of the state-of-the-art techniques used in performing data and memory-related optimizations in embedded systems. The optimizations are targeted directly or indirectly at the memory subsystem, and impact one or more out of three important cost metrics: area, performance, and power dissipation of the resulting implementation. We first examine architecture-independent optimizations in the form of code transoformations. We next cover a broad spectrum of optimizati ...

Keywords: DRAM, SRAM, address generation, allocation, architecture exploration, code transformation, data cache, data optimization, high-level synthesis, memory architecture customization, memory power dissipation, register file, size estimation, survey

10   Level set and PDE methods for computer graphics   ■
David Breen, Ron Fedkiw, Ken Museth, Stanley Osher, Guillermo Sapiro, Ross Whitaker
August 2004 **ACM SIGGRAPH 2004 Course Notes SIGGRAPH '04**
Publisher: ACM Press
Full text available: ⬛ pdf(17.07 MB)   Additional Information: full citation, abstract, citings

Level set methods, an important class of partial differential equation (PDE) methods, define dynamic surfaces implicitly as the level set (iso-surface) of a sampled, evolving nD function. The course begins with preparatory material that introduces the concept of using partial differential equations to solve problems in computer graphics, geometric modeling and computer vision. This will include the structure and behavior of several different types of differential equations, e.g. the level set eq ...

11   ■
Research papers: stream and sequence mining: Fast and approximate stream mining of quantiles and frequencies using graphics processors

Naga K. Govindaraju, Nikunj Raghuvanshi, Dinesh Manocha
June 2005 **Proceedings of the 2005 ACM SIGMOD international conference on Management of data**
Publisher: ACM Press
Full text available: pdf(658.89 KB)   Additional Information: <u>full citation</u>, <u>abstract</u>, <u>references</u>

We present algorithms for fast quantile and frequency estimation in large data streams using graphics processors (GPUs). We exploit the high computation power and memory bandwidth of graphics processors and present a new sorting algorithm that performs rasterization operations on the GPUs. We use sorting as the main computational component for histogram approximation and construction of ε-approximate quantile and frequency summaries. Our algorithms for numerical statistics computation on ...

Keywords: data streams, frequencies, graphics processors, memory bandwidth, quantiles, sliding windows, sorting

12 <u>Status report of the graphic standards planning committee of ACM/SIGGRAPH: State-of-the-art of graphic software packages</u>
Compuater Graphics staff
September 1977 **ACM SIGGRAPH Computer Graphics**, Volume 11 Issue 3
Publisher: ACM Press
Full text available: pdf(9.03 MB)   Additional Information: <u>full citation</u>, <u>references</u>

13 <u>System design methodologies and experiences: Low power storage cycle budget distribution tool support for hierarchical graphs</u>
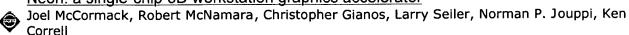Erik Brockmeyer, Arnout Vandecappelle, Sven Wuytack, Francky Catthoor
September 2000 **Proceedings of the 13th international symposium on System synthesis**
Publisher: IEEE Computer Society
Full text available: pdf(110.75 KB)   Additional Information: <u>full citation</u>, <u>abstract</u>, <u>references</u>, <u>citings</u>

In data dominated applications, like multi-media and telecom applications, data storage and transfers are the most important factors in terms of energy consumption, area and system performance. Several steps which optimize these costs are present in our systematic Data Transfer and Storage Exploration methodology. In the important step discussed in this paper, the cycle budget available for background storage transfers is globally distributed over the application's memory accesses that are typic ...

14 <u>Neon: a single-chip 3D workstation graphics accelerator</u>
Joel McCormack, Robert McNamara, Christopher Gianos, Larry Seiler, Norman P. Jouppi, Ken Correll
August 1998 **Proceedings of the ACM SIGGRAPH/EUROGRAPHICS workshop on Graphics hardware**
Publisher: ACM Press
Full text available: pdf(1.58 MB)   Additional Information: <u>full citation</u>, <u>references</u>, <u>citings</u>, <u>index terms</u>

Keywords: chunk rendering, direct rendering, graphics pipeline, level of detail, rasterization, texture cache, tile rendering

15 <u>Collision detection and proximity queries</u>
Sunil Hadap, Dave Eberle, Pascal Volino, Ming C. Lin, Stephane Redon, Christer Ericson

August 2004 **ACM SIGGRAPH 2004 Course Notes SIGGRAPH '04**
Publisher: ACM Press
Full text available: pdf(11.22 MB)   Additional Information: full citation, abstract

This course will primarily cover widely accepted and proved methodologies in collision detection. In addition more advanced or recent topics such as continuous collision detection, ADFs, and using graphics hardware will be introduced. When appropriate the methods discussed will be tied to familiar applications such as rigid body and cloth simulation, and will be compared. The course is a good overview for those developing applications in physically based modeling, VR, haptics, and robotics.

16 Courses: Exploiting perception in high-fidelity virtual environments
Mashhuda Glencross, Alan G. Chalmers, Ming C. Lin, Miguel A. Otaduy, Diego Gutierrez
July 2006 **Material presented at the ACM SIGGRAPH 2006 conference SIGGRAPH '06**
Publisher: ACM Press
Full text available: pdf(5.25 MB)   Additional Information: full citation, abstract

This course introduces high-fidelity virtual environments and explains the key components required to build compelling environments. Then it details perceptually inspired techniques that facilitate high-fidelity rendering, collaboration, and complex interaction in these virtual environments. Particular emphasis is placed on real applications, with several live demonstrations.

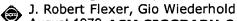**17** Status report of the graphic standards planning committee
Computer Graphics staff
August 1979 **ACM SIGGRAPH Computer Graphics**, Volume 13 Issue 3
Publisher: ACM Press
Full text available: pdf(15.01 MB)   Additional Information: full citation, references, citings

18 A building block approach to color graphics
J. Robert Flexer, Gio Wiederhold
August 1979 **ACM SIGGRAPH Computer Graphics , Proceedings of the 6th annual conference on Computer graphics and interactive techniques SIGGRAPH '79**, Volume 13 Issue 2
Publisher: ACM Press
Full text available: pdf(1.21 MB)   Additional Information: full citation, abstract, references, index terms

Graphics and imaging are important in scientific, academic and industrial environments. In the past graphics systems have been used with large computers and were only available to a minority of users. The relatively small and specialized use of graphics has inhibited sharing of software and prevented standardization necessary for widespread use. Dense semiconductor memory has recently become easily available in large quantities and makes high resolution graphics and imaging systems feasible ...

Keywords: Color graphics, Frame buffer, Imaging, Lightpen, Photo trigger, Rasterscan display, S-100 bus, Video digitizer, Video display

19 Shape-based retrieval and analysis of 3D models
Thomas Funkhouser, Michael Kazhdan
August 2004 **ACM SIGGRAPH 2004 Course Notes SIGGRAPH '04**
Publisher: ACM Press
Full text available: pdf(12.56 MB)   Additional Information: full citation, abstract

Large repositories of 3D data are rapidly becoming available in several fields, including

mechanical CAD, molecular biology, and computer graphics. As the number of 3D models grows, there is an increasing need for computer algorithms to help people find the interesting ones and discover relationships between them. Unfortunately, traditional text-based search techniques are not always effective for 3D models, especially when queries are geometric in nature (e.g., find me objects that fit into thi ...

20 Compiler-directed page coloring for multiprocessors

Edouard Bugnion, Jennifer M. Anderson, Todd C. Mowry, Mendel Rosenblum, Monica S. Lam
September 1996 **ACM SIGPLAN Notices , ACM SIGOPS Operating Systems Review , Proceedings of the seventh international conference on Architectural support for programming languages and operating systems ASPLOS-VII**, Volume 31 , 30 Issue 9 , 5

Publisher: ACM Press

Full text available: ⬛ pdf(1.37 MB)   Additional Information: <u>full citation</u>, <u>abstract</u>, <u>references</u>, <u>citings</u>, <u>index terms</u>

This paper presents a new technique, *compiler-directed page coloring*, that eliminates conflict misses in multiprocessor applications. It enables applications to make better use of the increased aggregate cache size available in a multiprocessor. This technique uses the compiler's knowledge of the access patterns of the parallelized applications to direct the operating system's virtual memory page mapping strategy. We demonstrate that this technique can lead to significant performance impr ...

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      Volume 23, Issue 4, Apr 1975 Page(s):348 - 353
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☐ 2. **Joint content authentication and error control for wireless multimedia co**
      Hong Heather Yu; Peng Yin; Xiaolong Yu;
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